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ABSTRACT

Part of the series "Managing Highway Maintenance," the unit explains how maintenance work should be described, measured, and classified. It is designed for supervisors who need to know the mechanics of describing work. The format is a programed, self-instruction approach in which information is presented in progressive segments or frames. (EA)

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MANAGING HIGHWAY MAINTENANCE

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MAINTENANCE ACTIVITIES, WORK UNITS AND CLASSIFYING WORK

Management by Objectives Series

TE 007 339

UNIT 6

LEVEL 2

FEDERAL HIGHWAY ADMINISTRATION
Offices of Research and Development
January 1973

This book is part of the series "Managing Highway Maintenance," prepared for the Implementation Division, Office of Development, Federal Highway Administration, under contract FH-11-7600. The series as a whole is described in the *Training Guide and Catalog* volume.

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Implementation Division
Offices of Research and
Development

Washington, D.C.
January 1973

INTRODUCTION

The way maintenance is managed depends on the kinds and amounts of work being done. For some purposes, it's okay to say that maintenance is patching, sealing and some painting. But to plan and control work effectively, it has to be described clearly. This unit explains how maintenance work should be described, measured and classified. The training is designed especially for supervisors who need to know the mechanics of describing work.

TRAINING TECHNIQUE

The information in this unit is presented in small segments -- called frames. Most frames require you to answer a question about the information in the frame. The answer you pick will instruct you to go to a different part of the unit. To complete the training:

+ CAREFULLY READ EACH FRAME.

+ FOLLOW THE DIRECTIONS AT THE END OF EACH FRAME.

Turn the page and read frame 1.

Section One

DESCRIBING MAINTENANCE WORK

1

There is no doubt about it, managing maintenance is difficult. Work that doesn't get done, is not done right, or is not scheduled and controlled, is a problem. But most of the problems can be solved by using a systems approach to maintenance management.

1 (continued)

A systems approach has at least six elements:

1. Work activities -- that describe what is being done, and work units -- that indicate how much is being done;

2. Maintenance feature inventories -- that list the items to be maintained;

3. Maintenance standards -- that indicate why, where, when and how an activity will be done -- plus the results expected when performing an activity;

4. Maintenance work programs -- that estimate the kinds and amounts of work needed;

5. Crew scheduling procedures -- designed to get the best combinations of men and equipment doing the correct activity at the right place and time; and

6. Work reporting and control procedures -- designed to correct exceptions to plans and standards.

This training is about the first element -- work activities and work units.

Activities and work units have to be defined and described before any other part of the system can be developed. Without adequate descriptions of maintenance work, and without ways of measuring work, there can be no management system. Descriptions of work and units of work measurement help the Department conduct feature inventories, develop and use maintenance standards, and prepare work programs. Activities and work units also are used to schedule, report and control work.

1 (continued)

What conclusions can be reached about work activities?

A.	Maintenance work must be described in ways that help manage maintenance.	Go to Frame 2.
B.	Work activities sound important, but I probably should not be reading this training.	Go to Frame 3.
C.	An effective management system depends on how maintenance activities are described.	Go to Frame 4.
D.	Maintenance management is made easier by how well work activities are described.	Go to Frame 5.

2

Maintenance work has to be described in ways that help manage maintenance. True. Good work descriptions make a management system run smoothly. The ways activities are described can make a big difference in how well a system works. Poor descriptions cause confusion among supervisors who schedule and report work. They also make it difficult for anyone to use standards and work programs.

The same thing can be said about work units. A system probably will not run smoothly if a "ton of aggregate" is used as the work unit for premix patching -- when a "cubic yard of premix" would cause less confusion.

So this conclusion is right. Another good one is given in Frame 1.

Go back to Frame 1 and find it.

3

You should not be reading this training? Maybe not. If you are a truck driver or a construction inspector or an accountant, you should not be reading this material. But if you're a maintenance supervisor, continue reading. This training is for you. It deals with how to describe maintenance activities and how to use them and why.

You have the right unit of training, but the wrong conclusion to the points in Frame 1.

Go back to Frame 1 and reach a better conclusion.

4

An effective management system depends on how activities are described. This is a good conclusion. Useful activity descriptions help supervisors schedule, report and control work. They also increase the benefits gained by using maintenance standards and work programs. The same things are true of work units. Units that accurately show the amounts of work being done -- such as ton, cubic yard, pass mile and lane mile -- are much more useful than those which are not accurate -- such as "a little premix" or "a lot of mowing".

So activity descriptions and work units are important to a management system.

Turn to Frame 6 for a definition of both a maintenance activity and a work unit.

5

It would be nice if this were true. How well activities are described is important to a management system. It helps solve management problems, but it does <u>not</u> make a supervisor's job any easier.

Go back to Frame 1, review the main points, and come to a different conclusion.

A MAINTENANCE ACTIVITY is a specific type of work that is done to repair, recondition or replace a roadway feature -- such as a portion of asphalt surface or a sign or bridge. An activity also can be administrative work that is done to support maintenance crews -- such as stockpiling sand or supervising work.

A WORK UNIT is a quantity that is used as a measure of work for a certain activity -- such as "ton of premix" for premix patching or "acre of grass mowed" for machine mowing.

An activity is a combination of tasks done to maintain the roads, streets and rights-of-way. And the unit for that activity measures the amount of work done.

Which of the following examples best matches the activity and work unit definitions?

A. Description: Sealing roadways with one or more layers of hot asphalt and crushed aggregate.
Work Unit: Cubic yard of aggregate. Go to Frame 7.

B. Description: Hand-tool patching with premix material to correct potholes, edge failures and severe depressions on asphalt surfaces.
Work Unit: Ton of premix. Go to Frame 8.

C. Description: Reshaping shoulders by motor grader.
Work Unit: Cubic yard of material moved. Go to Frame 9.

D. Description: Mechanical tamping of premix patches -- after each layer of premix is placed.
Work Unit: Hour of tamping. Go to Frame 10.

7

Description: Sealing roadways with one or more layers of hot asphalt and crushed aggregate.

Work Unit: Cubic yard of aggregate.

Yes, these are an activity description and a work unit. But they could be better. For example, the activity description might say something about when or why the work is done. One reason might be to correct raveled asphalt surfacing or to increase skid resistance. And instead of measuring the amount of sealing by cubic yards, it's probably better to use a lane mile or square yard as the work unit. The reasons for this are in another frame.

In the meantime, go back to Frame 6 and choose another description and work unit.

8

Description: Hand-tool patching with premix material to correct potholes, edge failures and severe depressions on asphalt surfaces.

Work Unit: Ton of premix.

Yes, this is the best of the four descriptions and units given in Frame 6. Some improvements or changes could be made, but overall, it's not a bad description of work that is done to patch asphalt surfaces.

Turn to Frame 11.

9

Description: Reshaping shoulders by motor grader.

Work Unit: Cubic yard of material moved.

This description doesn't say too much. It could be better. It could say something about the reasons for doing the work -- why it is done or when the shoulders should be reshaped. A better description might be:

Reshaping shoulders by motor grader
to correct edge rutting and to restore
the proper grade to shoulder materials.

The work unit is worse. It's true that cubic yards of material are moved when reshaping shoulders, but this is not the main result of the work. Besides that, it's almost impossible to measure a reshaping job in terms of cubic yards. A better unit would be "mile of shoulder reshaped" -- or even "pass mile."

So this answer is out.

Try another answer -- in Frame 6.

10

Description: Mechanical tamping of premix patches -- after each layer of premix is placed.

Work Unit: Hour of tamping.

No. This does not match the definitions. It's not even a maintenance activity. Frame 6 says that an activity is a combination of tasks. Mechanical tamping is only one task. It's part of an activity.

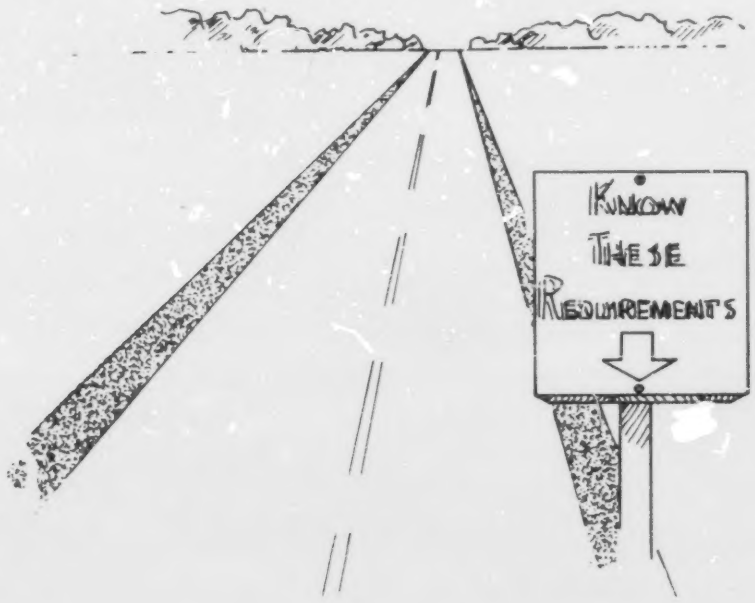
Other tasks that might make up the activity include:

+ Positioning a dump truck near the work site,
+ Cleaning and squaring off the area being patched,
+ Tacking the area,
+ Shoveling premix into the hole, and
+ Checking the patch to make sure it's level with the surrounding surface.

When all of these tasks are combined, the result is a description of one activity. One task is not the same as one activity.

Go to Frame 6 and pick another answer.

Remember, maintenance activities are used to schedule, report and control work. A detailed description of each activity is not necessary so long as the description itself meets six basic requirements.



11 (continued)

A useful activity description:

1. Describes a specific type of work.

2. Gives some idea of the work involved.

3. Says when or why the work should be done.

4. Helps schedule, report and control work.

5. Has a unit of work assigned to it.

6. Is easily understood.

Which of the following descriptions comes closer to meeting the six requirements shown above?

A. Repair or replacement of traffic control devices when the device endangers the safety of the motorist. Go to Frame 12.

B. Replacement of steel beam guardrail sections, posts and hardware, and realignment as needed to correct damage caused by traffic accidents. Go to Frame 13.

12

Repair or replacement of traffic control devices when the device endangers the safety of the motorist.

This description does not meet most of the requirements in Frame 11.

+ It does not describe a specific kind of work. As it is written, it could apply to maintenance of stop lights, flashers, warning signs, regulatory signs and even other traffic control devices, such as pavement markings. It looks like a reasonable activity description, but it's not.

+ It does give some idea of the work involved: repair or replacement. But that's all. The tasks done to replace a flasher unit are much different from the procedure used to replace pavement markings. The problem is how the work is defined. The description is too general.

+ It cannot be used to help schedule, report or control work. Again, the description is too general. Imagine a supervisor telling a crew foreman to repair traffic control devices. The supervisor would have a lot of explaining to do.

For these reasons, this answer is wrong.

Try again -- Frame 11.

13

It's probably obvious. This description comes close to meeting all of the requirements.

+ It describes a specific type of work -- "replacing steel beam guardrail sections, posts and hardware, and realignment as needed."

+ It gives some idea of the work involved. It is fairly simple to picture the activity being done.

+ It says when (or why) the work should be done -- "to correct damage caused by traffic accidents."

+ It can help schedule, report and control work. Most foremen have a good idea of what is meant when the boss says he wants a certain section of guardrail replaced. And reporting and controlling what has been done can then be fairly simple.

+ A unit of work can be assigned to the job -- maybe "lineal foot replaced."

+ It can be easily understood. The description is not too general, nor is it too detailed.

A description of replacing damaged guardrail could be written in several other ways. The one shown in Frame 11 is just an example. Other descriptions might make the work easier to understand. For instance, in some cases, it might be wise to leave out guardrail posts -- and prepare a separate activity description for replacing the posts. In other situations, it might be better to include in the description, the replacement of posts that are not damaged but simply rusted away.

13 (continued)

Here are two more activity descriptions. Which one comes closer to meeting the six requirements?

A. Cleaning and reshaping roadway ditches to restore the original flow line and grade, to include loading, hauling and disposing of ditch sediment.

Go to Frame 14.

B. Removing and disposing of bituminous surfacing from asphalt surfaces and replacement with fine graded asphalt premix material.

Go to Frame 15.

14

This description is much better than Choice B -- mainly because it shows when (or why) the work should be done. In effect, it says that ditches should be cleaned when sediment has built up to the point where the original flow line and grade have been covered or changed. Choice B fails to meet the "when" requirement. It does not say what kinds of surface conditions are to be corrected by removing and replacing bituminous pavement.

"Cleaning and reshaping roadway ditches to restore the original flow line and grade, to include loading, hauling and disposing of ditch sediment." This is one way to describe the work done to clean and reshape ditches. Other ways of describing the same work would be just as good. For example, it might be necessary for the activity to cover only "machine cleaning and reshaping." Or, maybe "hauling and disposing" should become part of another activity.

14 (continued)

The exact description -- or what should or should not be part of an activity -- depends partly on the decisions made by the head office and the field supervisors who use the descriptions to schedule, report and control work.

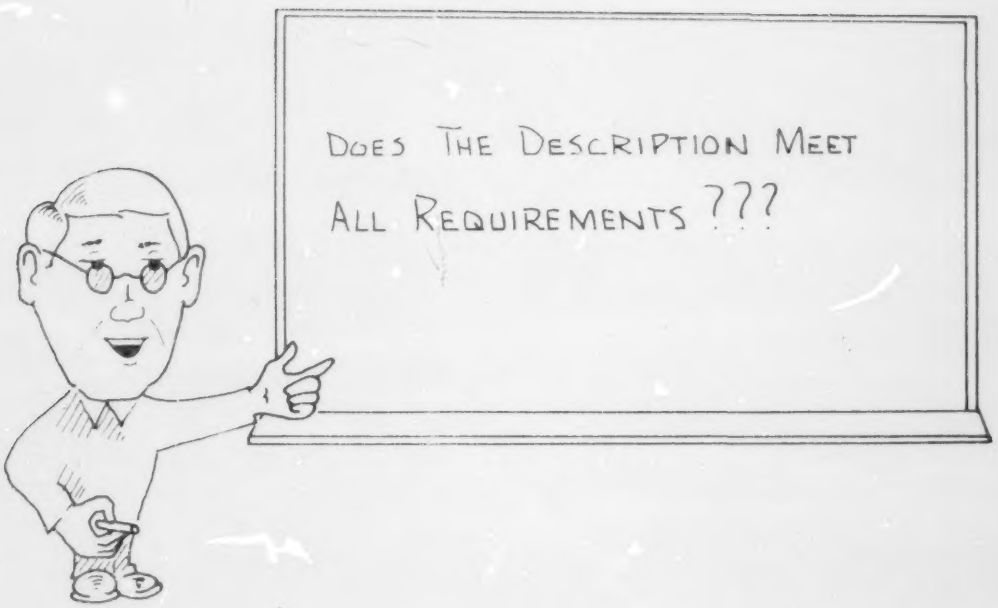
Most of these decisions are described in Frame 16. Turn to Frame 16.

15

No. "Removing and disposing of bituminous surfacing from asphalt surfaces and replacement with fine graded asphalt premix material" is not a good description.

The description defines a specific job. It gives a hint about the work involved. And a work unit can be assigned to the job. But it does not say when or why the work should be done. Is the work done to repair major surface failures? Is pothole repair included? Should it be done to correct severely cracked areas or is cracking repaired by another activity? Because it's not clear on these points, the description will not be very useful in scheduling work. It's likely to lead to some confusion.

The other description is much better. Go to the beginning of Frame 14.



Section Two

DEVELOPING MAINTENANCE ACTIVITIES AND WORK UNITS

An activity description is useful when all six requirements are met:

1. Does it describe a specific type of work?
2. Does it give some idea of the work (or tasks) involved?
3. Does it say when (or why) the work should be done?
4. Will it help schedule, report and control work?
5. Can a work unit be assigned to the description?
6. Can it be easily understood?

16 (continued)

The decisions made to develop activities are based on these requirements. Does a certain description meet the requirements? If the answer is "Yes," there is no doubt about it -- it can be used for maintenance management purposes. But what about cases where a description meets five of the six requirements? Is such a description useful?

A. Yes. Go to Frame 17.

B. No. Go to Frame 18.

17

An activity description that meets five of the six requirements is still useful? Maybe so, but it depends on which requirement is not met. There may be some conditions under which the requirements can be bent. Usually an activity description must meet all six requirements.

So, go to Frame 18.

A description that meets only five of the six requirements is not useful. This is the better answer. Activity descriptions which ignore one or more of the requirements are not useful -- at least for management purposes. And for management system purposes, all maintenance work has to be described -- from patching potholes and filling cracks to leveling surface distortions and sealing the roadway -- and this is just the beginning. Patching, filling, leveling and sealing might apply only to asphalt surface care. Other work activity descriptions have to be developed for maintaining concrete surfaces, drainage facilities, roadside areas and bridges.

So, it's obvious that a series of work activities is needed to describe all the work that is done. The actual number of activities needed probably depends on:

A.	How many different kinds of work can be identified as activities.	Go to Frame 19.
B.	How engineers and supervisors interpret the requirements.	Go to Frame 20.
C.	The amount of time and money available to the persons who are writing the descriptions.	Go to Frame 21.
D.	The amount of maintenance being done.	Go to Frame 22.

19

The number of activities that need to be developed depends on how many different kinds of work can be identified as activities. This answer has a bit of round about reasoning, but it's better than two other choices.

To serve as an activity description, a combination of tasks must be identified -- in ways that meet the six requirements. And the first requirement -- describing specific types of work -- is the most difficult.

For an example, turn to Frame 23.

20

The number of descriptions that need to be developed depends on the way engineers and supervisors interpret the requirements. True. Any one requirement can be met in several ways -- and all of the ways might be useful. This is the same as saying that there is more than one way to describe a certain kind of work.

Go to Frame 23 for an example.

21

The amount of time and money available determines how many activities will be described. No. It should not work this way. Within wide limits, time and money have to be thought about, but neither should determine whether or not a complete list of descriptions can be prepared.

Defining work is not very time consuming. And it does not take a lot of money to describe all of the work being done.

Make another choice -- in Frame 18.

22

The number of activity descriptions developed depends on the amount of maintenance being done? This is partly correct. If the amount of maintenance is related to different kinds of work, then more maintenance probably means different kinds of maintenance. But this is not always true. Chances are good that an agency with a budget of $1.5 million has as many different activities to perform as a department with a budget of $7 million. Both do the same types of work. It's just that one agency does more of the same, than the other.

The number of activities being done does not have to depend on the size of the department -- or the amount of work done.

Try again -- Frame 18.

23

Suppose you have been asked to develop a series of activity descriptions for asphalt surface maintenance. If you're like most supervisors, you will spend some time trying to figure out why the head office people don't do this work -- by themselves. There are two reasons: (1) field supervisors know more than the head office about the "nuts and bolts" of patching, mowing and other work, and (2) field supervisors have to work with the descriptions when scheduling, reporting and controlling work and when using maintenance standards.

Much more time should be spent in developing the descriptions. There is no rigid procedure for developing activity descriptions, but a few steps which have proved helpful are shown on the next page.

23 (continued)

The steps are:

+ Department records, such as materials invoices, work summaries, inventory accounts and employee time sheets or payroll records sometimes can help supply information.

+ Personal experience is valuable when trying to separate one kind of work from another.

+ Discussions with foremen, crew leaders and equipment operators provide information how certain types of work are being done. When is the work done? How and why? What equipment and tools are used? These are the questions that need to be answered.

+ Actual observations of the work are needed to make sure that the activity descriptions make sense -- not only to the head office, but to the supervisors who use the descriptions.

These steps can be useful. They are <u>most</u> useful because:

A. They make you more familiar with the "inner workings" of the Department. Go to Frame 24.

B. They identify which tasks are part of which activities. Go to Frame 25.

C. They provide most of the information you need to know, to develop the activity descriptions. Go to Frame 26.

24

The procedure for developing activity descriptions will make you more familiar with the "inner workings" of the Department? It may, but that's not why these four steps are most useful.

Think in terms of what you need to know to develop activity descriptions.

Read the four steps again in Frame 23 before making another choice.

25

The steps to take when developing activity descriptions are most useful because they identify which tasks are part of which activities. This is partly true. These steps should lead you to determine the tasks included in each activity.

But the steps in the procedure are <u>more</u> useful for another reason.

Find that reason in Frame 23.

This is it! These four steps provide most of the information you need to know to develop the activity descriptions.

So, you have been asked to prepare activity descriptions and all of these steps have been taken. During the discussions and observations, you made some notes about work that seems to fit an activity.

Notes about patching with premix:

> This work is done on asphalt surfaces to fill potholes, edge failures, severe depressions and other small surface breaks. The job consists of cleaning and squaring the area, placing a tack of liquid asphalt, putting hot or cold premix material in or over the bad area, tamping and rolling the premix, and brooming the surface after the tamping is done.
>
> This usually is a 4-man operation. Two trucks, one portable roller, shovels, picks, brooms and hand tamps are used to do the work. The foreman says that he also uses three men and one dump truck for the same kind of work. On days when only one truck is used, the crew may or may not take the roller.

26 (continued)

Bigger areas -- where more than two loads of material are needed -- are repaired by about the same procedure, except a third truck and a Gradall or backhoe are added to the basic crew.

These notes are reviewed and the work is summarized in five ways. Which way is the best description? (Read each description carefully before making a choice.)

A. Hand-tool or machine patching of potholes, edge failures, severe depressions and other surface breaks, using premix material. Go to Frame 27.

B. Premix patching of potholes, edge failures, severe depressions and other small areas, using hand tools and, when needed, a small portable roller. Go to Frame 28.

C. Hand-tool patching of potholes, edge failures, severe depressions and other small areas, using one or two dump trucks and a small portable roller. Go to Frame 29.

D. Removing and replacing lost surface material to correct potholes, edge failures and other small areas. Go to Frame 30.

E. Hand-tool leveling of severe depressions and removing and replacing broken surfacing within potholes, edge failures and other surface breaks, and compacting with a portable roller. Go to Frame 31.

27

This description does not meet one of the requirements for an activity description. It probably is too general to be useful in scheduling work. It includes both hand and machine patching. Put yourself in the place of the person who has to schedule the work. Would you instruct the crew leader to do some "hand or machine patching"? Most supervisors would be more specific.

On the basis of the notes in Frame 26, it is clear that more than one activity was observed.

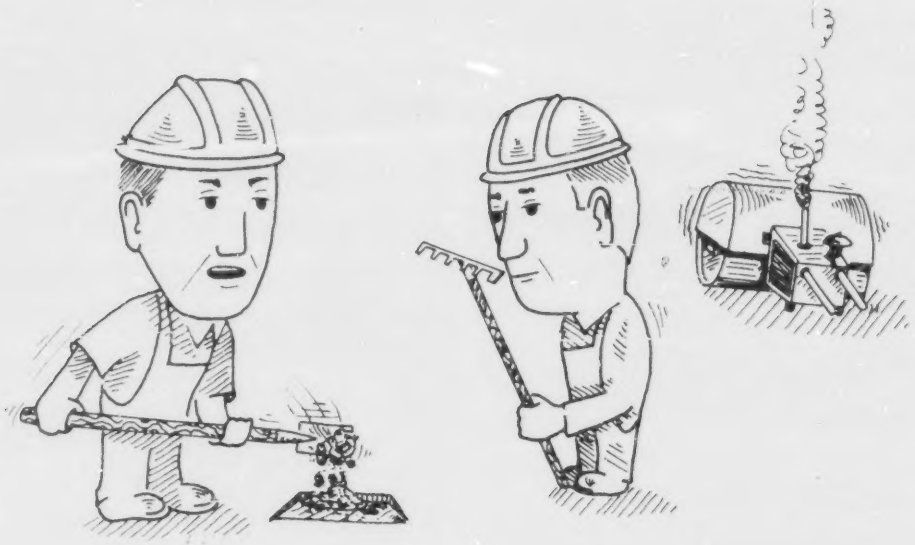
Read the notes again and pick a better description of one type of work -- Frame 26.

28

"Premix patching of potholes, edge failures, severe depressions and other small areas, using hand tools and, when needed, a small portable roller." Why not? This description pretty well covers part of the notes -- and it meets the six requirements of a useful description.

But there are other ways to describe the same work. Choice C says: "Hand-tool patching of potholes, edge failures, severe depressions and other small areas, using one or two dump trucks and a small portable roller." It is worded differently from the first description, but it means about the same thing.

28 (continued)



The point is that for any type of work, there is more than one way of describing it. The two descriptions in this frame are only possibilities. Someone else might describe the same work in a different way. For example, another agency might describe premix patching with a portable roller as one activity and premix patching without a portable roller as another activity.

The notes in Frame 26 also say that "bigger areas . . . are repaired with the same procedure, except a third truck and a Gradall or backhoe are added to the basic crew."

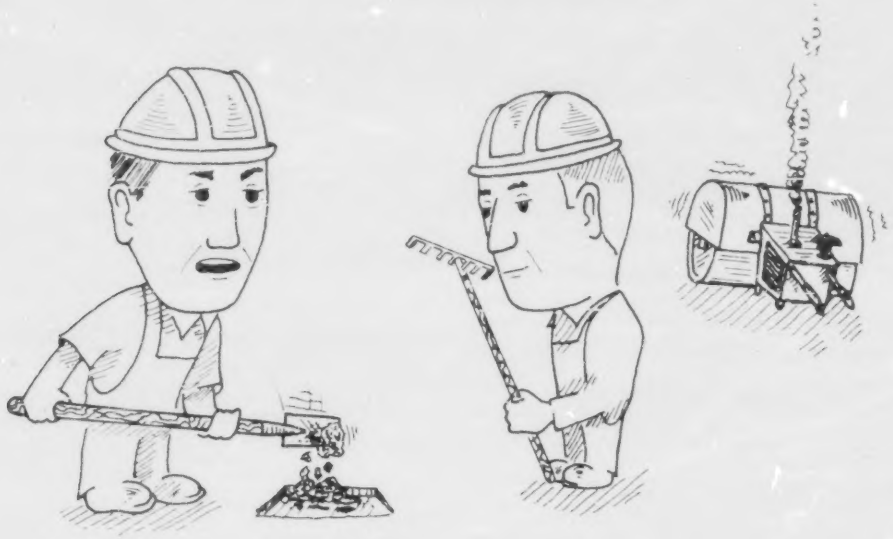
Up to now, we have ignored this observation. Should an attempt be made to put it in the description above?

A. Yes, because it is simply one more part of premix patching work. Go to Frame 32.

B. No, because then the description would be too general. Go to Frame 33.

C. Maybe. It depends on what the supervisors who are preparing the descriptions want. Go to Frame 34.

"Hand-tool patching of potholes, edge failures, severe depressions and other small areas, using one or two dump trucks and a small portable roller." Sure! This description covers most of the notes -- and meets the six requirements of a useful description. But there are other ways to describe the same work. For example, Choice B says, "Premix patching of potholes, edge failures, severe depressions and other small areas, using hand tools and, when needed, a small portable roller." It's worded differently from the first description, but the two mean about the same thing.



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29 (continued)

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B. No, because then the description would be too general. Go to Frame 33.

C. Maybe. It depends on what the supervisors who are preparing the descriptions want. Go to Frame 34.

30

"Removing and replacing lost surface material to correct potholes, edge failures and other small areas." No. This is not the best way of describing the work observed. This description ignores the fact that more than one activity was observed. Although it is not put in these terms, at least two, and maybe three types of work are involved.

+ Patching without a roller -- with one truck,

+ Patching with a roller -- with two trucks, and

+ Patching much larger areas -- with a third truck and excavation equipment.

At least three other descriptions are better than this one.

Guess again -- Frame 26.

31

Yes. This is one way of describing part of the observed work. The description is a little awkward, but it does meet the six requirements.

Another description is worded a little better. Choose again -- Frame 26.

32

Patching larger areas with more men and equipment should be included in the description. This doesn't sound right, does it? It's not. The main reason is that "machine patching" takes almost twice the manpower and equipment. So, it is quite a bit different from patching potholes and minor surface breaks by hand. There is enough difference between the two to prepare separate descriptions -- at least one for "machine patching" and one or two for "hand patching." Remember, a useful activity description describes a specific kind of work, not two or three kinds of work.

Another answer sounds a lot better. Go back to Frame 29.

33

No attempt should be made to put "machine patching" in a description about "hand-tool patching." True. If this were done, the description might come out like this:

> "Hand-tool or machine patching of potholes,
> edge failures, severe depressions and other
> surface breaks, using premix material."

33 (continued)

With a description like this, it's hard to decide whether or not one specific type of work is described. Most supervisors would say that there is a difference between using three or four men, one or two trucks and a roller; and seven or eight men, three trucks, a roller and excavating equipment.

Skip to Frame 37 for a quick look at the differences.

34

Whether or not "machine patching" should be put in the description depends on what the supervisors who are preparing the descriptions want. This is not a very good answer. Supervisors who have the job of developing a list of activities do have to exercise a great deal of judgment. Their descriptions also must meet the six requirements. And the first requirement is that an activity must describe a specific type of work.

Does the following example describe a specific type of work?

> "Hand-tool or machine patching of potholes, edge failures, severe depressions and other surface breaks, using premix material."

A. Yes, it meets the first requirement. Go to Frame 35.

B. No, the description is too general. Go to Frame 36.

35

Wrong. This description tries to describe more than one kind of work. The key phrase is "hand-tool or machine patching." For practical purposes, it has to be one way or the other. As it stands, the description is confusing. If a foreman reported that his crew did hand-tool or machine patching, the normal reaction would be, "Which was it? Hand work? Or, was the patching done by machine?"

Activity descriptions must spell out clearly the differences among the kinds of work being done. At this point you're probably looking for something that will show what is meant by "specific kinds of work."

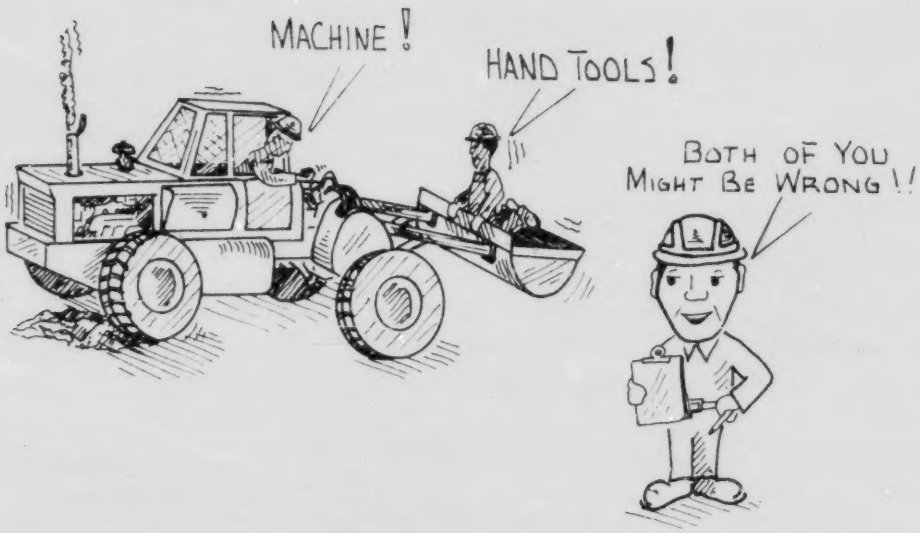
Go to Frame 37 for more details.

36

The description is too general. Right. "Hand-tool or machine patching" sounds like more than one type of work. It is. The procedures might be similar, but the work that gets done is different. For one thing, there should be a big difference in the amount of material placed. The average daily production when patching by hand might be only two or three tons. Production on machine patching should average several times that amount.

Go to Frame 37.

37



One of the conclusions reached in the last few frames was that hand-tool and machine patching must be described as separate activities. For asphalt surface patching, this conclusion probably is correct. But the "hand-tool versus machine" guideline is misleading -- for many types of work.

A better "rule of thumb" is the work procedure itself. Differences in the tasks being done -- from one type of work to another -- help to show where one activity ends and another begins. In the surface patching example, the tasks done to remove broken pavement by hand are much different from the tasks done when using a Gradall to remove the pavement. Differences can be seen in other types of work, such as mowing -- where clean-up and trim work is quite different from mowing wide, open areas. Both are done by machine, but the procedures are different.

Another useful guideline might be:

A.	Descriptions of the tasks from foremen who do the work.	Go to Frame 38.
B.	The results expected from different tasks.	Go to Frame 39.
C.	Both "A" and "B" are useful guidelines.	Go to Frame 40.

38

A useful guideline might be descriptions of tasks from foremen who do the work. Not exactly. Foremen can be very helpful when trying to get a "handle" on what's being done. Foremen and crew members can describe their work in as much detail as needed, but their details can be misleading. They may describe some tasks as being most important, and practically ignore others. Some of the tasks which are needed to assure safe practices or satisfactory workmanship may be forgotten.

By itself, a spoken description is not very useful as a guideline in describing activities.

Go to Frame 39.

39

Right. The results expected from different tasks are useful. This guideline is most valuable when the procedures seem to be alike. In the surface maintenance example, it could be argued that the same basic procedure is used -- only some of the details are different. But the results to be expected should be different. Patching potholes with hand tools should produce different results from removing and replacing broken surfacing. When patching potholes, the production and productivity should be lower, and the cost per work unit higher, than when removing and replacing broken pavement.

The same is true of the differences in results between mowing in wide, open areas and cleanup and trim work. The man mowing open areas might be able to average 15 to 20 acres per day while the trim man does his best to mow one or two acres.

39 (continued)

SIMPLIFY THE FIRST REQUIREMENT BY:

• WORK PROCEDURES
• EXPECTED RESULTS

So the first requirement is a tough one. It's made easier by adding two guidelines: work procedures and expected results. And when the first requirement is met, the second and third usually fall in line. When an activity describes a specific type of work (No. 1), it usually gives some idea of the tasks involved (No. 2), and when or why the work should be done (No. 3).

The fourth requirement also falls in line. A specific work description helps to schedule, report and control work. But at this point in preparing a series of activity descriptions, there is a danger in becoming too specific -- not because of the fourth requirement, but because so much attention has been paid to the first three.

The danger of becoming too specific is related to the fact that:

A.	Scheduling work can become an impossible task when descriptions are too specific.	Go to Frame 41.
B.	Persons who report work may be discouraged by the large number of activities.	Go to Frame 42.
C.	Attempts might be made to control too many activities.	Go to Frame 43.
D.	All of these (A, B and C) are possible dangers.	Go to Frame 44.

40

Wrong. Only one of these is a truly useful guideline.

Go to Frame 37 and pick it.

41

Descriptions which are too specific or too detailed can make scheduling impossible. True. Descriptions that are too specific increase the number of activities so that the persons scheduling work may have 500 separate activities to schedule. They would not all be done at the same time. But even if only 10 percent were scheduled at once, the task of making effective job assignments would be impossible.

Another danger is given -- in Frame 39.

42

True. The more specific the work description, the greater the number of activities that need to be reported.

Maintenance work reports must provide information for managing work. So a typical report will show what was done (an activity name or number), who did the work, how much manpower, equipment and materials were used, and what was accomplished (by work unit). Imagine the paperwork involved if a crew performed seven activities in one day -- which is <u>not</u> unlikely if activities are too specific.

There is no doubt about it. A danger of becoming too specific is related to the fact that persons who report work may be discouraged by the large number of activities.

But there are still other dangers. Recheck Frame 39.

43

When activities are described too specifically, there is a chance that supervisors will try to control too many kinds of work. This is entirely possible. Maintenance work has to be controlled -- activity by activity.

Descriptions which are too general do not provide all of the facts needed to control work. But descriptions that are too specific clobber the supervisor with too many facts. And with too many facts, it is difficult to tell which ones are important and which are not. The result of this situation is a breakdown in the work control process: a collapse of the management process.

True. This is a possible danger. Another one is listed in Frame 39.

44

The danger of becoming too specific is that:

A. Work scheduling can become an impossible task;

B. Accurate work reporting is discouraged; and

C. Attempts might be made to control too many activities.

True. All of these are possibilities. The main reason is that all work has to be described and if descriptions are too specific, the number of activities increases to the point where work is not manageable.

Details of the reason why scheduling, reporting and controlling are made difficult are given in the last three frames. But the same point can be made by describing an automobile. It's much easier to describe and work with an engine or a wheel, than it is to describe and work with head gaskets, compression rings, rocker arms, cotter pins, grease caps, rims, crankshafts and nuts and bolts. Describing these things may at times need to be done, but not as a general rule.

44 (continued)

Describing maintenance work in great detail may sometimes be needed, but not for general management purposes.

What conclusions can be reached?

A. Managing maintenance is a lot like driving a car. Go to Frame 45.

B. The amount of detail needed to describe work has to be weighed against practical considerations. Go to Frame 46.

C. It is possible to develop too many activity descripiions. Go to Frame 47.

45

Managing maintenance is a lot like driving a car? Who says so? It's true that mental and physical actions are required to do both, but that's where the similarity ends.

The next conclusion is much better. Go to Frame 46.

46

The amount of detail needed to describe work has to be weighed against practical considerations. This is a logical conclusion. It's also possible to develop too many activity descriptions.

The problem is that management systems require specific descriptions of work. At the same time, there is a limit to the number of activities that can be useful in scheduling, reporting and controlling work. Some maintenance agencies have described only 60 activities; others use more than 200.

Go to Frame 48.

47

It is possible to develop too many activity descriptions. True. It's also true that the amount of detail needed to describe work has to be weighed against practical considerations.

The problem is that management systems require specific descriptions of work. At the same time, there is a limit to the number of activities that can be useful in scheduling, reporting and controlling work. Some maintenance agencies have described only 60 activities; others use more than 200.

Go to Frame 48.

What is the limit to the number of activities that should be described? This depends on the characteristics of the work being done, but around 100 seems practical for most departments. A rough breakdown of 100 activities might look like this:

	Number of Activities
Activities for surface and shoulder maintenance -- such as premix patching, leveling replacing concrete surface, crack repair, and reshaping non-paved shoulders	30
Activities for roadside and drainage maintenance -- including litter pickup, machine mowing, cleaning culverts, and reshaping ditches	20
Activities for traffic and signal maintenance -- to include centerline marking, replacing signs and servicing flashers	10
Activities for snow and ice control -- such as salting intersections, sanding roads, and plowing	10
Activities for maintenance improvements or betterments -- such as paving shoulders, and constructing turning lanes	10
Activities for administrative maintenance -- such as sick leave, stockpiling aggregate, and preparing payrolls	20

48 (continued)

After looking at this list, it is obvious that:

A. One hundred activities are needed to describe maintenance work. Go to Frame 49.

B. The breakdown cannot be used by all maintenance agencies. Go to Frame 50.

C. Most departments can use the breakdown of activities. Go to Frame 51.

D. More than 100 activities are needed to describe the work being done. Go to Frame 52.

49

One hundred activities are needed to describe maintenance work? No. In some instances, fewer than 100 activities are enough.

The list in Frame 48 is intended to show one possible breakdown. It is not meant to show what must be done to describe work.

Another choice is better -- in Frame 48.

50

This should be the most obvious statement. Florida supervisors have no use for snow and ice control activities. Wyoming probably doesn't need 20 activities for roadside and drainage maintenance. And the City of Detroit should have descriptions of work for sidewalk and gutter maintenance.

The breakdown only suggests the kinds of activities that are needed by a typical agency. The number of activity descriptions actually developed depends on the nature of the work being done, how it is done, and how the requirements are interpreted.

Go to Frame 53.

51

Most departments can use this breakdown of activities. Probably not. There are enough differences in work -- from one department to another -- to support a different breakdown. One agency may have no use for a group of activities labeled "Maintenance Improvements." Another may need more than the 100 activities suggested in Frame 48.

The breakdown can serve as a rough guide or a starting point for describing maintenance work, but it cannot be used, as is, by most maintenance departments.

Pick another answer from Frame 48.

52

Wrong. Some maintenance agencies have found that 125 or 140 descriptions are needed. But others have been using only 60 or 70 activities -- with great success. So, it's not necessarily true that more than 100 are needed.

Another choice is much better -- in Frame 48.

QUIZ

This is a good place to review what you have learned about developing and describing work activities. Answer the following questions. Then check your answers with those given in Frame 54.

1. Which of the following is a definition of a work activity?
   A work activity is:

   A. A quantity that is used as a measure of work for a certain maintenance operation.

   B. A specific type of work that is done to repair, recondition or replace a roadway feature.

   C. A group of related maintenance operations.

   D. A series of steps taken to describe a maintenance operation.

53 QUIZ (continued)

2. Which of the following is the best example of an activity description and a work unit?

A. Description: Hand-tool patching with premix material to correct potholes, edge failures and severe depressions on asphalt surfaces.
Work Unit: Ton of premix.

B. Description: Sealing roadways with one or more layers of hot asphalt and crushed aggregate.
Work Unit: Cubic yard of aggregate.

C. Description: Reshaping shoulders by motor grader.
Work Unit: Cubic yard of material moved.

D. Description: Mechanical tamping of premix patches -- after each layer of premix is placed.
Work Unit: Hour of tamping.

3. One of the most important points to remember about developing activity descriptions is that:

A. They should meet at least four of the six requirements.

B. They should describe in detail the tasks involved.

C. They depend on the amount of maintenance being done.

D. They should say when (or why) the work should be done.

53 QUIZ (continued)

4. Sometimes there is a danger in becoming too specific when developing activity descriptions. The danger is related to the fact that:

   A. Scheduling work can become an impossible task when descriptions are too specific.

   B. Persons who report work may be discouraged by the large number of activities.

   C. Attempts might be made to control too many activities.

   D. All of the above (A, B and C) are possible dangers.

5. The number of activities that should be described:

   A. Should be at least 100.

   B. Must include the step-by-step procedure for doing the work.

   C. Depends on how engineers and supervisors interpret the requirements.

   D. Depends on the amount of time and money available to the persons who are writing the descriptions.

Go to Frame 54.

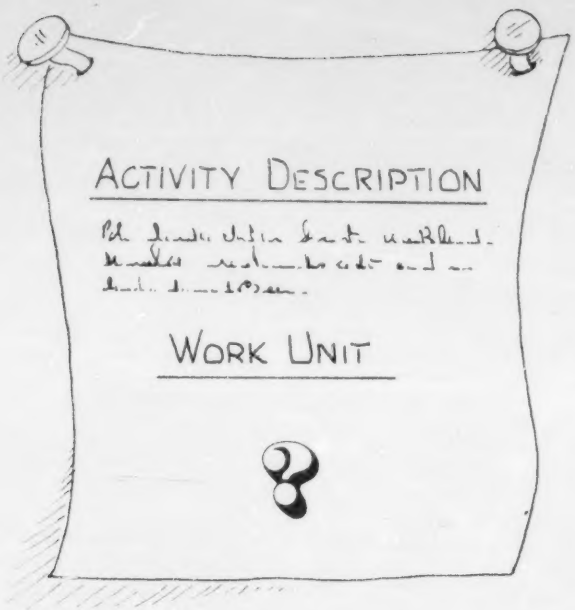
54

Here are the best answers to the questions in Frame 53. Compare your answers with these:

Question	Answer	
1	B	A work activity is a specific type of work that is done to repair, recondition or replace a roadway feature.
2	A	The best example of an activity description and work unit is: Description: Hand-tool patching with premix material to correct potholes, edge failures and severe depressions on asphalt surfaces. Work Unit: Ton of premix.
3	D	One of the most important points to remember about developing activity descriptions is that they should say when (or why) the work should be done.
4	D	The danger of becoming too specific when developing work activities is that: 1. Work scheduling can become an impossible task. 2. Accurate work reporting is discouraged, and 3. Attempts might be made to control too many activities.
5	C	The number of activities that should be described depends on how engineers and supervisors interpret the requirements.

Study any questions you missed, before turning to Frame 55.

55



We have said that a useful activity description must meet six requirements. Four requirements have already been discussed:

1. It should describe a specific type of work.
2. It should give some idea of the work involved.
3. It should say when or why the work should be done.
4. It should help schedule, report and control work.

The fifth requirement says that work units must be assigned to each activity description.

As indicated in Frame 6, a work unit is a quantity that's used as a measure of work for a certain activity -- such as "ton of premix patching" or "acre of grass mowed." Setting a unit for most activities is relatively simple, but it is important that each unit:

+ Represent an amount of work (or a final result), and
+ Is a practical means of measuring work.

55 (continued)

Given the following description, which work unit adequately represents an amount of work?

> Reshaping gravel or dirt surfaces by motor grader to remix surface materials and restore the original cross section to the surface.

A.	Mile of surface reshaped.	Go to Frame 56.
B.	Pass mile graded.	Go to Frame 57.
C.	Cubic yard of material moved.	Go to Frame 58.

56

"Mile of surface reshaped" adequately represents an amount of work. Right.

Some supervisors would argue that "pass mile" should be used because it bears a closer relationship to the amount of effort spent. And they could cite an example where one operator, working smooth roads, accomplishes 10 miles with 30 passes; and another operator, making the same number of passes on rough terrain, gets only 5 miles done. Which unit is better? Effort should be recognized, but most supervisors would agree that a "mile" comes closer to representing an amount of work -- or a final result.

56 (continued)

Here is another example:

Flushing streets and roadways with water
to remove dirt and other accumulated debris.

Which unit is a useful measure of the quantity of work accomplished?

A.	Gallon of water used.	Go to Frame 59.
B.	Square yard of surface flushed.	Go to Frame 60.
C.	Mile of surface flushed.	Go to Frame 61.
D.	Lane mile of surface flushed.	Go to Frame 62.

57

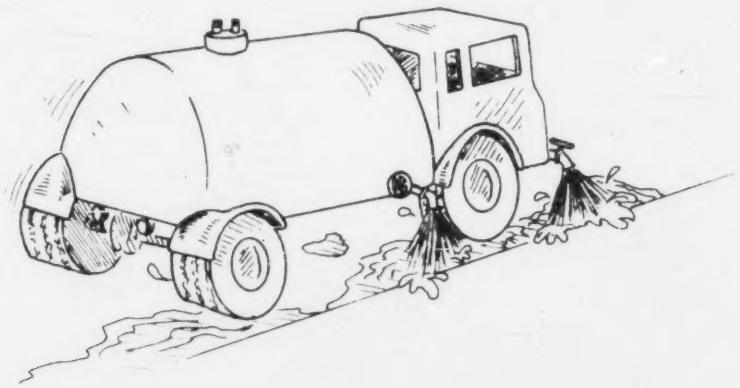
Reshaping gravel or dirt surface should be measured in pass miles. This is a good possibility. The only objection to using "pass mile" for reshaping is that it does not represent a final result. The final result of the work is in "miles" or "lane miles" of surface reshaped -- not "pass miles."

On the other hand, it could be argued that a work unit should bear a direct relationship to effort. One operator blading a very rough road might make 30 passes over a 5-mile segment. His accomplishment is either "30 pass miles" or "5 miles" (or maybe "10 lane miles"). At the same time, another operator working smooth roads might accomplish 10 miles of reshaping in 30 passes. Which unit is better? Most supervisors would say that "mile" should be used. Some would contend that using "mile" is unfair to the operator assigned to the rough segment. He makes the

57 (continued)

same number of passes -- and works just as hard -- as the other operator, but he accomplishes only half the number of miles. But in this example, the majority wins -- most supervisors would use "mile of surface reshaped" because it more clearly represents an amount of work -- or a final result.

Here is another example:



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C.	Mile of surface flushed.	Go to Frame 61.
D.	Lane mile of surface flushed.	Go to Frame 62.

58

"Cubic yard of material moved" fully represents an amount of work? Not for reshaping gravel or dirt surfaces. A cubic yard of material moved bears little relationship to the final result: miles of surface reshaped.

Pick a better unit -- from Frame 55.

59

"Gallon of water used"? Wrong. For some kinds of work, a gallon would be a useful way of measuring the amount to be done or the amount that's been done, but for flushing streets there is a better work unit -- one that suggests a final result of the flushing.

Try again -- Frame 56 or 57.

60

"Square yard" is a good unit for the quantity of flushing done. This is a possibility, but for the time being let's say that it should not be used.

Go to Frame 61.

61

"Mile of surface flushed." This is a good choice. Another good unit is "lane mile of surface flushed." Either one is a descriptive way of measuring a quantity of work. And the decision to favor one over the other would be based on how the flushing is done. If it's done one lane at a time, "lane mile" probably is better than "mile."

"Square yard of surface flushed" was also listed. Why is it not a useful measure of work?

A.	Because it is not descriptive.	Go to Frame 63.
B.	Because "square yard" is not a final result.	Go to Frame 64.
C.	Because it is not practical.	Go to Frame 65.

62

"Lane mile of surface flushed" should be used to describe an amount of work. True. But another unit might be just as good.

Check the unit described in Frame 61.

63

"Square yard of surface flushed" is not descriptive. This is not a good choice. The fact of the matter is that "square yard" is much more specific -- and therefore more descriptive -- than "mile" or "lane mile."

There is a much better reason for not using "square yard" -- in Frame 61.

64

"Square yard" does not represent a final result. Wrong. The unit of work is just as final as "mile" or "lane mile." All are units of numerical measure and all could be used.

Go back to Frame 61.

65

"Square yard" is not a useful measure of the amount of flushing because it is not practical. Sure! Most of the time, a crew can accomplish several miles or lane miles of work in one day. Why force the crew to try to measure the number of square yards flushed, when "mile" or "lane mile" is much more practical?

Usually, more than one unit can be found to describe, in a practical way, an amount of work. Here are a few examples:

Activity	Unit of Measure
Premix patching -- potholes and edge breaks	Ton or Cubic Yard
Crack repair -- sealing reflection or shrinkage cracks	Lineal Foot or, in some cases, Gallon
Seal coating -- raveling, pitting and pattern cracking	Lane Mile or Mile
Cleaning and reshaping ditches -- where material is hauled away	Cubic Yard or Mile or Lineal Foot
Replacing roadside signs	Number of Signs Replaced or Square Foot of Sign Replaced
Litter pickup	Cubic Yard or Bag of Litter

65 (continued)

As with activity descriptions, the work unit that's used depends on the nature of the work itself -- how it's done and how the requirements are interpreted.

Ideally, each activity should have a unit that is closely related to the final results of that work. And most activities can be measured in terms of final results -- such as tons, miles, acres and feet. But for some kinds of work, a measurable result is not practical.

For which of the following activities would a measurable result be impractical?

A. Sanding bridge decks. Go to Frame 66.

B. Cleaning culverts. Go to Frame 67.

C. Supervising maintenance crews. Go to Frame 68.

66

Sanding bridge decks. No. A practical unit for this work would be "each deck sanded" or "number of bridges sanded".

Try again -- Frame 65.

67

Cleaning culverts. No. Culvert cleaning can be measured by the number of structures cleaned or the lineal feet cleaned. And both units are practical. So this answer is wrong.

Pick the obvious one -- in Frame 65.

68

It would be impractical to assign a measurable result to "supervising maintenance crews." Yes, it would. It's obvious that the result of effective supervision is "work accomplished." But it is not practical (or reasonable) to set "crews supervised" or "work done" as a measurable unit. The same thing is true of most administrative activities, such as annual leave, preparing payrolls and servicing trucks. For these activities, "man-hour" or "crew-day" can be used to account for some kind of work being done.

Man-hour or crew-day also can be used for other work in cases where a regular work unit would be impractical. For example, hand cutting of grass and weeds beneath a guardrail probably should have a regular measurable unit. But to make the system practical, it might be best to use man-hour or crew-day to account for this activity. What unit should be used for flagging traffic around an overturned truck? "Hour of flagging" is a possibility, but "man-hour" probably is better. It's not really better to use man-hour or crew-day instead of a measurable result, but for some kinds of work, it's simply more practical -- and understandable.

Turn to Frame 69 for the sixth requirement.

Are activity descriptions and work units easily understood? If the answer is "Yes," the final requirement has been met. The outcome of not meeting this requirement is obvious: misunderstandings, confusion and frustration.

Which of the following descriptions and units are likely to lead to misunderstandings?

A.	Description:	Hand-tool patching with premix material to correct potholes, edge failures and severe depressions on asphalt surfaces.	
	Work Unit:	Ton of premix.	Go to Frame 70.
B.	Description:	Marking of the traveled portion of the highway for vehicular and pedestrian traffic control.	
	Work Unit:	Foot of marking.	Go to Frame 71.
C.	Description:	Repair and replacement of all inoperable signal units, to include damaged flashers and crosswalk signals.	
	Work Unit:	Each unit repaired and replaced.	Go to Frame 72.

70

This is confusing? Maybe. It isn't supposed to be, but there is a chance that a foreman could misunderstand what is meant by "severe depressions." Other than that, the description and work unit seem reasonably clear.

Another description and unit are more confusing -- in Frame 69.

71

This description and work unit could cause some confusion. What kind of marking is included? It's probably natural to think that the description means centerline and edge stripe painting, but would it also include painting stop bars, crosswalks and turn guides? And what about the work unit? A foreman who has just completed 38 miles of edge striping is likely to be confused: "Do they really want me to convert miles into feet? Let's see, that's 5,820 times 38 -- or is it 5,280 . . . ?" It may seem perfectly reasonable to you or other supervisors, but it can be confusing to the paint crew foreman.

There is no way of knowing if a description or work unit is confusing unless it is checked and used by other supervisors. So this requirement has to be satisfied by field tests -- with the supervisors who use the activities to schedule, report and control work.

Go to Frame 73.

72

"Repair and replacement of all inoperable signal units, to include damaged flashers and crosswalk signals." Is this description confusing? Probably not, but there is a chance that the word "inoperable" could be confusing. Does it mean that: if a bulb is burned out, the entire flasher head should be replaced?

A better description might state that "all damaged signal heads -- including flashers and crosswalk signals -- should be replaced."

But another description and work unit are more likely to lead to misunderstandings.

Check Frame 69 again.

73

Here is a summary of the main points in this section:

+ Effective management systems have useful activity descriptions and work units.

+ The decisions made to develop useful descriptions and units center on six requirements. An activity description must:

  - o Describe a specific type of work;
  - o Give some idea of the work (or tasks) involved;
  - o Say when (or why) the work should be done;
  - o Help schedule, report and control work;
  - o Have a work unit; and
  - o Be easily understood.

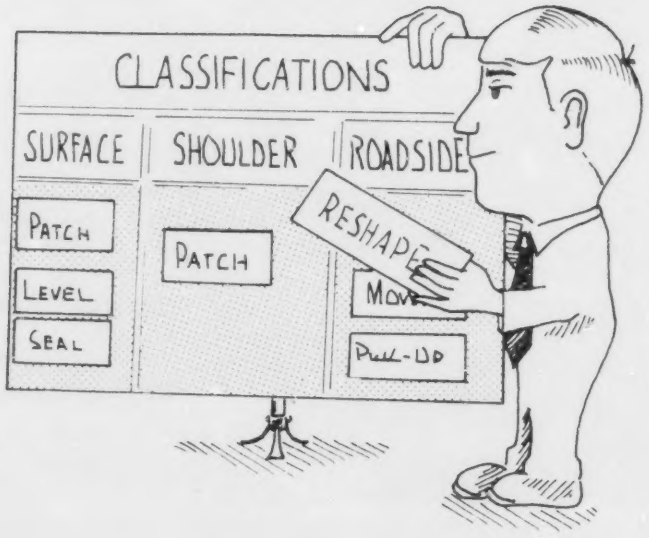
+ The work done to develop useful descriptions and units includes:

  - o Checking administrative records;
  - o Discussing work with foremen;
  - o Observing and recording work; and
  - o Checking to make sure that descriptions and units are easily understood.

+ Activity descriptions that are too general are of little value to field supervisors. Those which are too specific make difficult the process of scheduling, reporting and controlling work.

+ Work should be measured by units that represent final results -- such as ton, lane mile and acre. Units such as man-hour and crew-day should be used only when there is no other practical way to measure results.

Go to Frame 74.



Section Three

CLASSIFYING WORK

When all work has been described by activities, it should be classified or grouped in ways that will help manage maintenance. There are several useful methods. Perhaps the most widely used classification is by work priority.

74 (continued)

Part of a work priority classification might be organized in this manner:

Emergency Work

- Concrete Blowup Repair
- Wind and Flood Damage Maintenance
- Accident Clearing
- Emergency Surface Patching

Special Authority Maintenance

- Seal Coat
- Surface Leveling with Premix
- Premix Overlay
- Bridge Improvements
- .
- .
- .
- .

Routine Schedule Maintenance

- Reshaping Non-Paved Shoulders
- Mowing
- .
- .
- .

74 — (continued)

It's obvious that the activities shown in each category would not apply to all maintenance agencies. But a basic rule is suggested by the listing: activities should be classified in ways that will help manage work.

A priorities classification, like the one above, can help:

A.	The head office assign funds to each activity.	Go to Frame 75.
B.	Field supervisors schedule work.	Go to Frame 76.
C.	Foremen and crew leaders organize work.	Go to Frame 77.

75

This is not the correct answer -- for two reasons. First of all, it's almost impossible to assign money for emergency work. A lump sum is usually set up in a special account for emergencies. In all probability, the head office simply holds back a million or so dollars. Secondly, the Department is not likely to assign funds for each and every activity. Estimates for most activities can be developed, but the details probably are not needed.

Recheck the priority listing and pick another answer in Frame 74.

76

Scheduling work can be made easier by a priorities classification? Right. An important decision made in scheduling work is: when the work should be done. Which activities have to be done first, and which can be worked into the schedule as time permits?

A priority classification spells out the order in which the work is to be done. If reshaping shoulders and mowing need to be done, but the field supervisor does not have the resources for both, it is clear that a priority listing will help him make the decision: reshaping will be done this week because it's higher on the list than mowing. Such a listing is not difficult to develop. Once it's been distributed, it can be changed as needed, according to changes in top management policies.

A classification by work priority is also useful in that:

A.	Everyone will know what should be done.	Go to Frame 78.
B.	It causes fewer misunderstandings from one management level to another.	Go to Frame 79.
C.	It provides the same kind of interpretation of what is important and what is not, for all levels of management.	Go to Frame 80.

77

A classification by work priority can help foremen and crew leaders organize work. Probably not. Organizing work is mainly a matter of making sure that things are in the right place at the right time. And as far as crew leaders are concerned, this usually means getting trucks loaded with the tools to be used today, checking out the water level in a roller, and counting heads.

Work priorities are more useful to another management level -- shown in Frame 74.

78

One benefit of a priorities classification is that everyone will know what should be done. To some extent, this is true. But the statement gives more credit to a priorities classification than it deserves.

So try another statement -- in Frame 76.

79

Misunderstandings can be reduced by using a work priority listing. True, but how can it help?

Check Frame 76.

80

A priorities classification provides the same kind of interpretation of what is important and what is not. Yes -- as long as the listing is clear, there can be no doubt in anyone's mind that one activity is more important than another. The result might be the same levels of maintenance from one area to the next. Or, at the very least, it should contribute toward this goal.

Another useful classification might be one by:

A.	Cost of activity.	Go to Frame 81.
B.	Crew sizes for each activity.	Go to Frame 82.
C.	Tasks performed for each activity.	Go to Frame 83.

81

Yes. For some management purposes, a classification or ranking by cost of activity might be useful. To control maintenance costs, certain limitations of authority might be listed:

Routine maintenance -- can be performed without prior approval.

Prior approval required -- for projects which cost more than $500 but less than $1,200 per unit of work.

Detailed work estimate required -- for special work whose estimated total cost is more than $1,200.

A cost classification also can be used to help supervisors concentrate their efforts on critical activities. When the amount of work is considered along with unit costs for various activities, it is clear that a cost ranking could be useful.

Another useful classification is shown in Frame 80.

82

A crew size classification might be useful. Yes, it might. Part of the work scheduling process includes balancing manpower -- from one day to the next. And a key question in manpower balancing is: if 17 men show up for work today, what combination of needed maintenance will result in the best use of all 17? To help schedule work, a crew size grouping such as the one indicated on the next page might be useful.

82 (continued)

Staffing Requirements

Recommended Crew Size (Number of Men)	Applicable Activities
1-2	Sign Replacement Signal Head Replacement Cleaning Culverts Placing Barricades . . .
3-4	Premix Patching Litter Pickup . . .
5-6	Crack Repair Sand Sealing . . .

A complete classification would show the various activities which should be done by different size crews. And given work priorities, the person scheduling maintenance could select those activities on which the crew size adds to 17 -- or any other number. So a crew size classification might be useful.

There is at least some value in classifying work by function, priority, crew size and cost. These and other classifications, along with possible uses of each, are shown on the next page.

82 (continued)

CHART OF ACTIVITY CLASSIFICATIONS

Classification	Potential Use of Classification: Long-Range Planning	Accounting and Budgeting	Work Program Preparation	Crew Scheduling	Day-to-Day Supervision	Work Control
Work Priority	X	X	X	X	X	X
Crew Size	X		X	X	X	
Cost of Activity	X	X	X			
Quantity Control	X		X			X
Productivity Analysis	X					X
Management Level Authorization	X		X			X
Seasonal Nature of Work	X		X	X		

Some of the classifications and possible uses shown in the chart are less useful than others. Not all of the possibilities have been covered. But the chart presents enough information to show that work classifications should be developed -- whenever they will contribute to the management process.

Go to Frame 84.

53550

83

Tasks? This classification would be interesting. When developed, it might show that an asphalt tack is used for 20 percent of all roadway maintenance, or that six out of seven activities require a flagman for traffic control and crew protection. It's nice to know information, but this kind of classification would not be as useful as another one listed in Frame 80.

Go back to Frame 80.

84

There is no doubt about it, managing maintenance presents difficult problems. But most of the problems can be solved by using a systems approach to maintenance management. And an important part of the approach consists of work activities, work units and activity classifications:

+ Specific descriptions of work developed by administrators, engineers and supervisors who know maintenance;

+ Activity definitions -- based on six requirements and the kinds of procedures being used and results expected;

+ Work units that adequately represent amounts of work -- in a practical manner; and

+ Classifications that help manage maintenance.

That's it -- for maintenance activities, work units and classifying work.